Cognitive Mediation of Childhood Maltreatment and Adult Depression in Recent Crime Victims

Debra Kaysen, Christine D. Scher, Julie Mastnak, Patricia Resick
Center for Trauma Recovery, University of Missouri–St. Louis

Childhood maltreatment has been linked to adult depressive disorders. However, few studies have examined mechanisms through which childhood maltreatment may contribute to adult depression. Thus, we examined the role of one potential mechanism of this relationship, maladaptive cognitions, in a recently traumatized sample. Participants were adult women who had been recently raped (n = 133) or physically assaulted (n = 73). We examined whether maladaptive self- and other-cognitions mediated relationships between childhood sexual, physical, and emotional abuse and current depression. Relationships between childhood sexual abuse and both current depression symptoms and diagnosis were mediated by maladaptive cognitions about self. Relationships between both childhood sexual abuse and childhood physical abuse and adult depressive symptoms were mediated by maladaptive cognitions about others.

CHILDHOOD MALTREATMENT has been found to be a risk factor for adult depression (Hill, 2003; Jumper, 1995; Kaplan, Pelcovitz, & Labruna, 1999; MacMillan & Munn, 2001; Oddone, Genuis, & Violato, 2001, for reviews) across various populations, including both clinical and community samples. The majority of these studies have focused on the relationship between adult depression and childhood sexual or physical abuse (Bifulco, Brown, Moran, Ball, & Campbell, 1998; Cheasty, Clare, & Collins, 2002; Cohen, Brown, & Smailes, 2001; Levitan et al., 1998; MacMillan et al., 2001; Weiss, Longhurst, & Mazure, 1999). However, there is also increasing research suggesting a link between childhood emotional abuse and depression as well (Gibb et al., 2001; Rich, Gingerich, & Rosen, 1997; Roy, 1999).

Although numerous studies have linked childhood maltreatment to adult depression, few have examined potential mechanisms of this link. In accord with Beck's theory of depression, one mechanism through which childhood abuse may lead to adult depression is the schema. Schemas are defined as cognitive structures that guide the ways people attend to and interpret their environments (Beck, 1967, 1987; Kovacs & Beck, 1978). They lie dormant until activated by relevant stimuli, typically stress (Beck, 1967, 1987; Kovacs & Beck, 1978; see Segal & Ingram, 1994). In the case of depression-prone individuals, activated schemas are thought to provide access to a complex system of negative themes and give rise to a corresponding pattern of negative information processing that precipitates depression (Kovacs & Beck, 1978; Segal & Shaw, 1986).

Beck also theorized about the development of schemas. He hypothesized that schemas develop from interactions with the environment, primarily those interactions that occur during childhood (Beck, 1967, 1987; Kovacs & Beck, 1978). Thus, for example, if early interactions are characterized by negativity, schemas may develop which guide attention to negative rather than positive events, and which lead to interpretations of benign events as negative. In line with this thinking, Beck (Beck, 1967, 1987; Kovacs & Beck, 1978) theorized that depressed people possess negative schemas of themselves, the world, and the future. Taken together, the theorizing of Beck and others regarding schemas and depression suggests a mediational model wherein childhood maltreatment may lead to negative

Debra Kaysen is now at the University of Washington, Seattle; Christine D. Scher is now at California State University, San Bernardino; Patricia Resick is now at the Women's Health Sciences Division, National Center for PTSD, and Boston University.

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Address correspondence to Debra Kaysen, University of Washington Medical School, Department of Psychiatry and Behavioral Sciences, Box 356560, Seattle, WA 98195-0650; e-mail: dkaysen@u.washington.edu.

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schemas regarding oneself, the world, and the future that, when activated, may contribute to the development of depression.

Aspects of this mediational model have received empirical support. Beck's hypothesis (Beck, 1967, 1987; Kovacs & Beck, 1978) that depressed people possess negative views of themselves, the world, and the future has been supported on numerous occasions (see Haaga, Dyck, & Ernst, 1991, for a review). Moreover, studies of individuals vulnerable to depression have suggested that, once elicited, such schemas may play a causal role in the development of depression (Ingram, Bernet, & McLaughlin, 1994; Ingram, Miranda, & Segal, 1998; Miranda, Persons, & Byers, 1990; Teasdale & Dent, 1987). Studies have also examined links between childhood maltreatment and depressive schemas. Findings generally support the idea that childhood maltreatment indeed confers risk for information-processing biases and overt cognitions characteristic of maladaptive schemas. For example, studies of maltreated children compared to nonmaltreated children suggest that maltreated children allocate more attentional resources to displays of negative emotion relative to positive emotion (Pollak, Cicchetti, Klorman, & Brumaghim, 1997; Pollak, Klorman, Thatcher, & Cicchetti, 2001). Maltreated children also report more maladaptive cognitions (i.e., negative expectations about the future) compared to nonmaltreated children (Allen & Tarnowski, 1989). Studies of adults with childhood maltreatment histories support these findings (Gibb et al., 2001; Gold, 1986; Harter, 2000; Parker, Gladstone, Mitchell, Wilhelm, & Roy, 2000; Wenninger & Ehlers, 1998).

Although extant theory and research suggests that maladaptive schemas may mediate between childhood maltreatment and adult depression, only one study to our knowledge has specifically examined this mediational hypothesis. Using a college student sample, Gibb and colleagues (Gibb et al., 2001) examined relationships between self-reported history of childhood emotional, physical, and sexual abuse, attributional style and cognitions about oneself and the world, and occurrence of interview-diagnosed depression over a 2.5-year period. They found that a maladaptive cognitive style mediated the expected relationship between emotional abuse and depression. However, a history of physical or sexual abuse did not predict depression, and a history of sexual abuse did not predict cognitive risk. These findings are consistent with the suggestion of Rose and Abramson (1992) that emotional maltreatment may have a particularly negative impact upon the development of maladaptive schemas and consequently upon the development of depression.

The findings of Gibb and colleagues (Gibb et al., 2001) are provocative. Nonetheless, as the authors acknowledge, the lack of relationships between physical and sexual abuse and depression and between sexual abuse and cognitive risk conflict with the findings of previous studies. In addition to methodological differences between Gibb et al. and previous studies noted by the authors (i.e., Gibb et al. assessed emotional, physical, and sexual maltreatment simultaneously, scaled maltreatment continuously rather than dichotomously, and chose participants based on cognitive risk status), we believe two other factors may have accounted for these conflicting findings. First, Gibb et al.'s sample consisted of college students, a population that by definition tends to be higher functioning. Not surprisingly, based on the study population, the study participants reported very limited experiences with physical and sexual maltreatment. For example, among a high cognitive risk group, the average number of types of physical maltreatment experienced was one, and the average number of types of sexual maltreatment experienced was .66; standard deviations were 1.36 for physical maltreatment and 1.67 for sexual maltreatment. This may have mitigated any relationships between childhood physical and sexual abuse, cognitive risk, and depression. Second, Gibb et al. did not account for the presence of schema-activating stress; the lack of such stress may also have mitigated relationships between childhood maltreatment, cognitive risk, and depression (Mitchell, Parker, Gladstone, Wilhelm, & Austin, 2003; Parker et al., 2000). Given these potential limitations and the conflicting findings with previous research, the aim of the current study was to extend the work of Gibb and colleagues using a population with a wider range of childhood maltreatment experiences who had all recently experienced a significant stressor.

We examined relationships between childhood physical, sexual, and emotional maltreatment, cognitions regarding oneself and others, and depression among women who had been physically or sexually assaulted within the past month. We utilized recently assaulted women as participants for two primary reasons. First, the occurrence of a recent assault helped ensure that all participants had experienced schema-activating stress. Second, given the high rates of revictimization among childhood maltreatment survivors (Desai, Arias, Thompson, & Basile, 2002), choosing a recently assaulted sample helped ensure that participants would have experienced a wide range of childhood maltreatment experiences. We chose to examine cognitions of oneself and others because these sorts of cognitions are among those linked by Beck to the devel-

opment of depression (Beck, 1967, 1987; Kovacs & Beck, 1978). Childhood maltreatment and cognitions were assessed via a self-report, paper-and-pencil measure, and depression was assessed via a self-report measure and a diagnostic interview. Based on the bulk of extant literature, we hypothesized that all forms of childhood maltreatment would be related to both self-report of depressive symptoms and diagnosis of major depression and that negative cognitions regarding oneself and others would mediate these relationships.

Method

PARTICIPANTS

Participants (N = 206) were recruited through police, hospital, and victim service agencies as part of a larger study examining recovery from assault. Assaults consisted of either sexual assaults (n = 133; completed vaginal, oral, or anal penetrative assault) or first-degree physical assaults (n = 73). Of the physical assault group, 24% experienced serious injuries during the assault (fractures, concussions, or burns) as opposed to 9% of the sexual assault group. Police reports were made in 94% of the cases. To ensure informed consent and valid responses, persons who were illiterate, apparently psychotic, or intoxicated at the time of assessment were excluded. Illiteracy was determined based on the participants' ability to read and explain the consent form. Psychosis was assessed based on the psychosis portion of the Structured Clinical Interview for *DSM-III-R* Non-Patient Version (SCID; Spitzer, Williams, Gibbon, & First, 1989), and intoxication was based on clinical judgment of the trained interviewers. All participants were assessed between 2 weeks and 4 weeks postassault.

The mean age of this sample was 31.21 years (SD = 8.58; range = 18 to 57). Average education was 12.48 years (SD = 2.32; range = 2 to 18). Fifty-six percent of the participants were single, 19% were married or cohabiting, and the remainder were separated, widowed, or divorced. Forty-six percent of the sample earned less than $5,000 in the past year, and 81% earned under $20,000. After adjusting for the cost-of-living increases since these data were collected, this is the equivalent of 46% of the sample earning less than $5,804 over the past year, and 81% earning under $23,215 (NewsEngin, 2004). Sixty-nine percent of the sample were African American, 27% were Caucasian, and 4% were Hispanic.

MEASURES

Participants completed interviews and self-report questionnaires assessing aspects of the index trauma, childhood victimization experiences, and current psychological symptomatology. Relevant to this article are the following:

History of Victimization Questionnaire (HVQ; Resick, Jordan, Girelli, Hutter, & Marhoefer-Dvorak, 1988). The HVQ is a 56-item self-report measure that surveys childhood exposure to sexual, physical, and emotional victimization. In the present study, we used rational methods to create three dichotomous scores for childhood sexual abuse (CSA), childhood physical abuse (CPA), and childhood emotional abuse (CEA). The internal consistency coefficients were .71 for the CSA items, .90 for the CPA items, and .83 for the CEA items.

Two items assessed childhood sexual abuse. One item assessed sexual fondling committed by an adult when the participant was under 17 years of age, while a second item assessed oral, anal, or vaginal penetrative assault committed by an adult when the participant was under 17 years of age. Seven items measured reports of childhood physical abuse, including being hit with a fist, being kicked, being thrown, being burned or scalded, sustaining broken bones, having damage to internal organs, and being treated by a physician for injuries. For both child sexual and physical abuse, items were collapsed into a dichotomous variable wherein an affirmative response on any item was coded as having experienced abuse. Three items measured reports of child emotional abuse. These included being called bad, dumb, or stupid; being threatened with a beating; and being cursed at. These items were collapsed into a dichotomous variable wherein indicating that any of these events had occurred more than half the time was coded as having experienced abuse.

Personal Beliefs and Reactions Scale (PBRS; Resick, Schnicke, & Markway, 1991). The PBRS was developed to measure maladaptive cognitions following traumatic events. This self-report questionnaire consists of 55 statements rated from 0 (*not at all true for you*) to 6 (*completely true for you*). The scale yields two higher-order subscales reflecting distorted cognitions about self and about others. When examined in a rape sample, the PBRS had a test-retest reliability coefficient of .81 over a 2-week period and internal consistency coefficients ranged from .61 to .79 (Mechanic & Resick, 1993). The PBRS has also been found to distinguish between victims with and without PTSD, appears sensitive to the effects of treatment, and has convergent validity with other measures of trauma-related cognitions (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999; Owens & Chard, 2001; Owens, Pike, & Chard, 2001; Wenninger & Ehlers, 1998). For the present sample, the internal consistency coefficients were .83 for the self subscale and .83 for the others subscale. In this study the mean score for the self

subscale was 3.46 (SD = 1.02), ranging from .45 to 5.85; for the other subscale the mean score was 3.52 (SD = .98), ranging from .60 to 5.85.

Beck Depression Inventory (BDI; Beck, 1967). The BDI is a self-report measure designed to assess current depressive symptomatology. Respondents are presented with 21 groups of four statements and are instructed to identify each statement that describes the way they have been feeling. The statements are ranked from 0 to 3 in order of severity and scores thus range from 0 to 63. The BDI has convergent validity with other measures of depression such as the Hamilton Psychiatric Rating Scale for Depression, the Zung Self Reported Depression Scale, and the MMPI Depression Scale (Groth-Marnat, 2003). Correlations with clinician ratings of depression ranged from .62 to .66 within a sample of female physical and sexual assault victims (Foa, Riggs, Dancu, & Rothbaum, 1993). Internal consistency for the BDI ranges from .73 to .92 with a mean of .86. (Beck, Steer, & Garbin, 1988). In this study, the internal consistency coefficient was .92. Scores of less than 10 on the BDI are seen as indicative of little or no depression; scores between 10 and 18 are considered to reflect "mild to moderate" depression; scores between 19 and 29 are considered to reflect "moderate to severe" depression; and scores over 30 are indicative of "severe" depression (Groth-Marnat, 2003). The mean BDI score for the present study was 19.09 (SD = 10.86), indicating an overall "moderate to severe" level of depression within the sample.

Structured Clinical Interview for DSM-III-R Non-Patient Version (SCID-MDD; Spitzer et al., 1989). The SCID is a semistructured diagnostic interview based on *DSM-III-R* criteria. The depression module of the SCID was used to assess current and lifetime major depressive disorder (hereafter referred to as SCID-MDD). In the current study, every SCID-MDD interview was audiotaped; 34 tapes (17%) were scored by a second rater for diagnostic reliability. Categorical diagnostic analyses revealed that the kappa for the diagnosis of current major depressive disorder was .73 with 88% interrater agreement. Similarly, kappa for the diagnosis of past major depressive disorder was .82 with 91% interrater agreement. Approximately 30% of this sample met criteria for current major depression (n = 62), and 52% met criteria for lifetime major depressive disorder (n = 107), based on the SCID-MDD interviews.

Results

PREVALENCE OF CHILD MALTREATMENT

Fifty-three percent of this sample (n = 109) reported that they had experienced some form of child sexual abuse whereas 32% (n = 66) reported experiencing some form of child physical abuse. Fifty-two percent of the sample (n = 106) reported experiencing emotional abuse. In addition, abuse in this sample frequently did not occur in isolation. Although 28% had experienced only one form of child maltreatment (n = 57), 40% of the sample had experienced more than one type of abuse. Of these, 23% had experienced two forms of abuse (n = 48), and 17% had experienced sexual, physical, and emotional abuse (n = 34). Emotional and physical abuse most frequently co-occurred (ϕ = .44, $p < .001$). Eighty-three percent of the participants who experienced physical abuse also reported emotional abuse. There was a significant association between sexual and physical abuse (ϕ = .18, $p < .01$) but the association between emotional and sexual abuse (ϕ = .14) was not statistically significant.

MEDIATIONAL HYPOTHESES AND STATISTICAL ANALYSES

Our interests were in testing the role of cognitions about self and cognitions about others in mediating the relationship between childhood maltreatment and adult depression. Therefore, four sets of related hypotheses were proposed: (a) that maladaptive cognitions about self would mediate a relationship between childhood maltreatment and current depressive symptoms; (b) that maladaptive cognitions about self would mediate a relationship between childhood maltreatment and current major depressive disorder; (c) that maladaptive cognitions about others would mediate a relationship between childhood maltreatment and current depressive symptoms; and (d) that maladaptive cognitions about others would mediate a relationship between childhood maltreatment and current major depressive disorder.

Statistical analyses were conducted in accordance with the recommendations of Baron and Kenny (1986) and Holmbeck (1997) for testing mediation. Specifically, a series of simultaneous regression equations were conducted for each hypothesis. For each hypothesis, the mediator (e.g., self-cognitions) was first regressed on the independent variable (i.e., CSA, CPA, and CSA HVQ scores entered simultaneously). Second, the dependent variable (e.g., BDI) was regressed on the independent variable. Third, the dependent variable was regressed on both the independent variable and the mediator. Mediation was considered to occur if the following conditions existed: (a) the independent variable affected the mediator in the first regression, (b) the independent variable affected the dependent variable in the second regression, and (c) the mediator affected the

dependent variable in the third regression, with a significant decrease in the relationship between the independent variable and dependent variable. The statistical significance of the mediated effect (i.e., the decrease in the effect of the independent variable on the dependent variable evidenced between the second and third regression equations) was tested by dividing the mediated effect by its standard error to obtain a z-score and comparing this z-score to a normal distribution (Baron & Kenny, 1986; Goodman, 1960).

Data screening. The data were examined for compliance with the assumptions of multiple regression according to the guidelines provided by Tabachnick and Fidell (2001). There were no univariate outliers identified based on the criteria of standardized scores more than 3.29 standard deviations from the mean of the scale. The data were examined for multicollinearity using both the tolerance value and the variance inflation factor (VIF). Based on these parameters, there were no problems with multicollinearity. (Correlations are presented in Table 1.)

Type of assault. To examine whether we could collapse across the sexual and physical assault groups for the mediational analyses, we first examined whether the two types of assault had different relationships with the variables of interest. Chi-squared analyses were used to test the relationship between type of assault and dichotomous variables (CSA, CPA, CEA, and SCID-MDD) and analysis of variance was used to test the relationship between type of assault and continuous measures (BDI, PBRS self, and PBRS others). No significant relationships were found between each type of child maltreatment (CSA, CPA, and CEA) and type of assault (sexual and physical). There was also no significant relationship between SCID-MDD and type of assault. There was a significant difference in BDI scores between the sexual and physical assault groups, with the sexual assault group having higher BDI scores, $F(1, 204) = 5.58$, $p < .05$. The sexual assault participants also had significantly more maladaptive PBRS self scores, $F(1, 206) = 11.99$, $p < .01$. However, there were no significant differences between the sexual and physical assault groups on PBRS others. Given the lack of consistent differences between the physical and sexual assault groups, all further analyses collapsed across these groups.

TABLE 1 Intercorrelations for Depression, Child Maltreatment, and Cognitions

Measure	1	2	3	4	5	6	7
1. BDI	—						
2. SCID-MDD	.38*	—					
3. CSA	.19*	.23*	—				
4. CPA	.23*	.22*	.18*	—			
5. CEA	.20*	.13	.14	.44*	—		
6. PBRS-self	−.69*	−.30*	−.22*	−.18*	−.16*	—	
7. PBRS-others	−.71*	−.29*	−.24*	−.27*	−.21*	.76*	—

Note. BDI = Beck Depression Inventory (n = 180); SCID-MDD = Structured Interview for *DSM-III-R* Non-Patient Version (n = 166); CSA = History of Victimization Questionnaire–Child Sexual Abuse Items; CPA = History of Victimization Questionnaire–Child Physical Abuse Items; CEA = History of Victimization Questionnaire–Child Emotional Abuse Items; PBRS-self = Personal Beliefs and Reactions Scale–Self subscale; PBRS-others = Personal Beliefs and Reactions Scale–Others subscale. *$p < .05$.

Self-cognitions as a mediator between childhood maltreatment and depression. We first assessed self-cognitions as a mediator of childhood maltreatment and current depressive symptomatology using PBRS self scores, the CSA, CPA, and CEA scores from the HVQ, and the BDI (n = 180). In the first equation, childhood maltreatment was significantly associated with PBRS self scores, $R^2 = .07$, $F(3, 177) = 4.71$, $p < .01$. Of the types of maltreatment, CSA was the only significant predictor of PBRS self scores ($\beta = -.19$, $p < .01$). Childhood maltreatment was also significantly associated with BDI scores, $R^2 = .09$, $F(3, 177) = 5.62$, $p < .01$. Of the types of maltreatment, both CSA ($\beta = .15$, $p < .05$) and CPA ($\beta = .16$, $p < .05$) were significant predictors of BDI scores. The full model, with both childhood maltreatment and PBRS self scores included, was also significant, $R^2 = .49$, $F(4, 176) = 41.54$, $p < .01$. PBRS self scores were the only significant predictors of BDI scores in the full model ($\beta = -.66$, $p < .01$), with more maladaptive PBRS self scores associated with higher BDI scores. CSA ($\beta = -.03$) and CPA ($\beta = -.09$) were no longer significant predictors of BDI scores. The mediation of CSA and BDI by PBRS self scores was statistically significant ($z = 2.47$, $p < .05$).

Self-cognitions were then assessed as a mediator of childhood maltreatment and major depressive disorder using PBRS self scores, the CSA, CPA, and CEA scores, and current depression diagnosis from the SCID-MDD (n = 166). Logistic regression was used for all analyses involving the SCID-MDD. In the first equation, childhood maltreatment was significantly associated with PBRS self scores, $R^2 = .08$, $F(3, 163) = 4.58$, $p < .01$. Of the types of maltreatment, CSA was the only significant predictor of PBRS self scores ($\beta = -.21$, $p < .01$). Childhood maltreatment was significantly associated with the SCID-MDD. The overall model was significant, $R^2 = .119$, $\chi^2(3, 166) = 14.976$, $p < .01$. Of the types of maltreatment, both CSA ($W_j = 6.42$, $p < .05$) and CPA ($W_j = 4.03$, $p < .05$) were significant predictors of the SCID-MDD. The full model, with both

childhood maltreatment and PBRS self scores included, was also significant, $R^2 = .19$, $\chi^2(4, 166) = 24.91$, $p < .01$. PBRS self scores were the only significant predictors of the SCID-MDD in the full model ($W_j = 9.19$, $p < .01$). CSA ($W_j = 3.69$) and CPA ($W_j = 3.25$) were no longer significant predictors of the SCID-MDD. The mediation of CSA and SCID-MDD by PBRS self scores was statistically significant ($z = 1.98$, $p < .05$).

Cognitions about others as a mediator between childhood maltreatment and depression. Cognitions about others were then examined as a mediator of childhood maltreatment and current depressive symptomatology using PBRS other scores, the CSA, CPA, and CEA scores from the HVQ, and the BDI ($n = 180$). In the first equation, childhood maltreatment was significantly associated with PBRS other scores, $R^2 = .120$, $F(3, 177) = 8.01$, $p < .01$. Of the types of maltreatment, both CSA ($\beta = -.19$, $p < .01$) and CPA ($\beta = -.19$, $p < .05$) were significant predictors of PBRS other scores. Childhood maltreatment was also significantly associated with BDI scores, $R^2 = .09$, $F(3, 177) = 5.617$, $p < .01$. Of the types of maltreatment, both CSA ($\beta = .15$, $p < .05$) and CPA ($\beta = .16$, $p < .05$) were significant predictors of BDI scores. The full model, with both childhood maltreatment and PBRS other scores included, was also significant, $R^2 = .51$, $F(4, 176) = 45.66$, $p < .01$. PBRS other scores were the only significant predictors of BDI scores in the full model ($\beta = -.693$, $p < .01$), with more maladaptive PBRS other scores associated with higher BDI scores. CSA ($\beta = -.02$) and CPA ($\beta = -.03$) were no longer significant predictors of BDI scores. The mediation of CSA ($z = 2.62$, $p < .01$), CPA ($z = 2.34$, $p < .05$), and BDI by PBRS other scores was statistically significant.

Cognitions about others were then assessed as a mediator of childhood maltreatment and major depressive disorder diagnosis using PBRS other scores, the CSA, CPA, and CEA scores, and current diagnosis from the SCID-MDD ($n = 166$). Logistic regression was used for all analyses involving the SCID-MDD. In the first equation, childhood maltreatment was significantly associated with PBRS other scores, $R^2 = .12$, $F(3, 163) = 7.20$, $p < .01$. Of the types of maltreatment, both CSA ($\beta = -.22$, $p < .01$) and CPA ($\beta = -.17$, $p < .05$) were significant predictors of PBRS other scores. Childhood maltreatment was significantly associated with the SCID-MDD. The overall model was significant, $R^2 = .12$, $\chi^2(3, 166) = 14.98$, $p < .01$. Of the types of maltreatment, both CSA ($W_j = 6.42$, $p < .05$) and CPA ($W_j = 4.03$, $p < .05$) were significant predictors of the SCID-MDD. The full model, with both childhood maltreatment and PBRS other scores included, was also significant, $R^2 = .18$, $\chi^2(3, 166) = 23.00$, $p < .01$. PBRS other scores ($W_j = 7.58$, $p < .01$) and CSA ($W_j = 3.96$, $p < .05$) were the only significant predictors of the SCID-MDD in the full model. CPA ($W_j = 2.53$) was no longer a significant predictor of the SCID-MDD. The mediation of CSA ($z = 1.92$), CPA ($z = 1.62$) and SCID-MDD by PBRS other scores were not statistically significant.

Discussion

This study examined self- and other-cognitions as a mediator of relationships between childhood maltreatment and adult depressive symptoms and depressive diagnosis. It adds to previous work in two primary ways. First, several types of maltreatment were examined simultaneously in a sample with a high rate of childhood maltreatment. Second, cognitions as a mediator were examined following a recent and extreme stressor (assault); thus, cognitions were examined at a time when their effects were likely to be apparent. We hypothesized that negative cognitions regarding self and others would mediate between all forms of childhood maltreatment and adult depression.

Results generally supported the idea that maladaptive cognitions of self and others mediate between childhood maltreatment and adult depression. The results for childhood sexual abuse were particularly consistent. Childhood sexual abuse predicted maladaptive cognitions about both self and others. Childhood sexual abuse also predicted adult depression, both in terms of severity of symptoms and diagnosed major depression, after exposure to a recent traumatic stressor. The significant relationship between childhood sexual abuse and adult depressive symptoms was fully explained by the influence of maladaptive cognitions about self and others. The significant relationship between childhood sexual abuse and adult depression diagnosis was fully explained by the influence of maladaptive cognitions about self. However, cognitions regarding others did not mediate the relationship between childhood sexual abuse and depression diagnosis.

Cognitions also appeared to mediate relationships between childhood physical abuse and adult depressive symptoms. Specifically, cognitions regarding others mediated between childhood physical abuse and adult depressive symptoms. Nonetheless, other cognitions did not mediate between childhood physical abuse and adult major depression diagnosis. This difference in findings may be attributable to the reduction in power associated with the use of a dichotomous variable as a dependent measure.

We had hypothesized that all forms of child maltreatment would be predictive of adult depression, and that self- and other-cognitions would act as mediators of these relationships. Contrary to these hypotheses, we did not find support for a relationship between child emotional abuse and either adult depression following a traumatic event or maladaptive cognitions. This may be due to the considerable co-occurrence of childhood sexual, physical, and emotional abuse in this sample. For example, any unique effects of emotional abuse on the development of depression may diminish when severe physical or sexual abuse is also present. Overall, these findings suggest that it may be important to assess the effects of several maltreatment types simultaneously, as multiple types of maltreatment may interact to produce varying outcomes in adulthood (see, for example, Edwards, Holden, Felitti, & Anda, 2003).

Our findings have potential implications for treatment. These findings reinforce the notion that childhood maltreatment may contribute to the development of depressogenic schemas and related cognitions. Thus, identifying and challenging maltreatment-related schemas may be important in the cognitive-behavioral treatment of depression. The identification of these schemas may also be important in treating persons who present specifically with maltreatment-related concerns. Such a focus is certainly consistent with therapies for adult survivors of childhood sexual abuse (Chard, Weaver, & Resick, 1997; Owens, et al., 2001; Smucker, Dancu, Foa, & Niederee, 1995).

While the results of this study are intriguing, there are alternative explanations for these findings. It is possible that the recent assault may have caused the maladaptive cognitions and depression, rather than serving to activate dormant maladaptive cognitions, leading to an increase in depression. Recent assault has certainly been associated with depression. However, given the variable relationships between type of assault, symptoms, and cognitions, it seems unlikely that the recent stressor alone accounts for the findings.

We also did not address other potential mediators of depression following traumatic stress. Specifically, depression may be secondary to PTSD following trauma (Boudreaux, Kilpatrick, Resnick, Best, & Saunders, 1998; Breslau, Davis, Peterson, & Schultz, 1997; Breslau, Davis, Peterson, Schultz, 2000). This would implicate PTSD symptoms as a potential mediator of any relationships between self- and other-cognitions and depression. Other studies have found, however, that prior depression increases the risk of developing PTSD (Acierno, Resnick, Kilpatrick, Saunders, & Best, 1999; O'Toole, Marshall, Schureck, & Dobson, 1998). Clearly, the relationship between PTSD and depression is complex and multiply determined. The relationships between the posttrauma outcomes of PTSD and depression and maladaptive schemas certainly warrant additional research attention, particularly given findings that the two diagnoses share common risk factors (Breslau et al., 2000). Thus, while the present study offers a possible model for explaining these relationships, it is by no means the only possible explanation.

There are several other potential limitations of this study. First, the research was conducted with female participants only, a group that is at greater risk for PTSD, depression, and sexual victimization (Breslau, 2002; Breslau, Chilcoat, Kessler, Peterson, & Lucia, 1999; Kessler, 2003). Accordingly, the possibility that these results may not generalize to men must be considered. This sample was also disproportionately economically disadvantaged. It is likely that these women face severe daily stresses, in addition to the specific assaults reported, including possible homelessness, inadequate housing, loss of material resources, a lack of access to health care, and increased risk of criminal victimization (Mathiesen, Tambs, & Dalgard, 1999; Stansfeld, Head, & Marmot, 1998). These additional stressors could very well increase their rates of depression and potentially affect the generalizability of these results to other samples (Belle & Doucet, 2003). Nonetheless, given that poverty has been associated with greatly elevated risks of physical or sexual assault, with one study finding that 83% of low-income mothers had experienced criminal victimization, examining risk factors for adult depression in a low-income sample may be especially pertinent and clinically useful (Bassuk, Buckner, Perloff, & Bassuk, 1998). High rates of preexisting depression could also affect interpretation of results. If indeed this study included a large number of women who were depressed prior to the most recent assault, these findings may predominantly confirm past research findings of maladaptive cognitions during a depressive episode.

Other limitations relate to issues of assessment. First, assessment of both independent and dependent variables relied extensively on self-report measures. Such self-reports can be affected by a number of factors, including social desirability concerns, normal memory limitations, and mood state at the time of recall (Brewin, Andrews, & Gotlib, 1993; Kendall, 1981). However, it is notable that a similar pattern of results was found regardless of whether the primary outcome measure was self-report (BDI) or interviewer-administered (SCID). It is also possible that psychopathological symptoms among

this study's participants may have affected accessibility of cognitions. For instance, participants with a great deal of anxiety may have had difficulty accessing childhood memories. Moreover, participants with a great deal of depressive symptomatology might systematically recall only negative aspects of their childhoods, leading to recall bias. Given these possibilities, future investigators should consider using additional assessment methods such as parent or sibling reports of childhood experience and depressive symptomatology, and cognitive experimental approaches (e.g., Stroop tasks) to assess schemas.

Finally, by their nature, these research questions would best be addressed using longitudinal data collection and analysis. By retrospectively assessing childhood maltreatment and concurrently assessing cognitions and symptomatology, the relationship between cognitions and symptomatology will artificially be strengthened due to the confound of time (Briere, 1997). Thus, it is possible that the mediational findings are a product of the design, rather than reflecting the true nature of the relationships between the variables of interest. In addition, the cross-sectional design used in the present study cannot truly disentangle the time line between child maltreatment, development of maladaptive cognitions, and development of depressive symptomatology. Nonetheless, these results are promising and do strongly reinforce the need for longitudinal studies to address the outcomes of maltreated children, especially including in these studies the analysis of potential cognitive mediators of adult psychopathology.

In conclusion, our results suggest that self- and other-cognitions may be important mediators of relationships between childhood maltreatment and adult depression. This is particularly the case for persons who have experienced childhood sexual and physical abuse. Additional research might continue to explore the impact of multiple abuse types on the development of depression in a wide range of samples, ranging from men and women with limited maltreatment experiences to those with severe childhood maltreatment histories. Such research should certainly consider the potential effects of stress when examining cognitions as a mediator of depressive distress.

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